U.S. DEPARTMENT OF

ENERGY

Office of the Chief
Information Officer

Data Center Optimization Plan

Federal Data Center Consolidation Initiative

Department of Energy
Data Center Optimization Plan

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1. Introduction

The Department of Energy (DOE) is committed to the overall reduction in the number of its data centers, consolidation of IT services, energy efficiency improvements, and cost reductions in data center / IT infrastructure operations.

In coordination with DOE's Strategic Sustainability Performance Plan (SSPP), DOE has set goals and performance targets that meet or exceed FDCCI objectives while introducing transformational IT services and technologies. These services and support technologies include:

- Advanced telework and hoteling support - actively encouraging employees to enter into telework agreements and to support an ever increasing mobile workforce and edge devices (i.e. tablets, smartphones, portable VTCs, etc.)

- Active power, cooling and environmental data center metering and assessments - allowing the evaluation of data center energy performance (i.e. PUE) and identification of improvement opportunities and consolidation projects

- Implementation of service automation tools and best practices - improving end user self-service capabilities and reducing help-desk, Tier 1 and 2 staffing requirements

- Accelerated migration to the cloud (IaaS, Paas, and SaaS) for enterprise services - reducing or eliminating the need for enterprise IT systems in our data centers, and

- Aggressive virtualization of data center servers and storage hardware systems - reducing the physical and energy footprint of IT systems in our data centers

The implementation of these services and technologies will result in reduced energy use and cost for data centers, a reduction in the overall need for data centers, a more efficient IT / data center workforce, and meet the current and future expectations and requirements of DOE users and business missions.

Such innovative transformation requires significant upfront investment to implement the required IT infrastructures, operational policies and practices, and associated data center and cloud environments. While these investments will result in significant savings over time, it is difficult (if not unrealistic) to allocate appropriated funds as budgets continue to be reduced and current funding is just sufficient to keep IT services on-line. Hence the implementation of these technologies is delayed or done in an incremental method leveraging funds when possible.

To address the challenge of how to best implement an effective and comprehensive data center consolidation program and to support introduction of transformational technologies that users expect and need, DOE is pursuing the combined use of traditional appropriated funds and alternative financing opportunities. Alternative financing contracts and services such as Energy Savings Performance Contracts (ESPC), Utility Energy Services Contracts (UESC), Power Purchase Agreements (PPA), and Energy Incentive Programs have the potential to facilitate the implementation of major consolidation and IT investment efforts without relying on limited appropriated funding.

DOE's decision to utilize both appropriated and alternative funding programs to finance data center consolidation efforts has resulted in the implementation of a FDCCI Plan that differs from the traditional implementation methodology suggested by OMB. This difference is primary in the identification and planning of data center consolidation and IT projects, how the associated costs are calculated and funded, and how project schedules are planned and tracked.

DOE's Federal Energy Management Program (FEMP) facilitates and supports Federal Departments and Agencies in identifying, obtaining, and implementing alternative financing programs. While traditionally used for facility infrastructure projects, these programs can also be used to fund (or support funding) transformational IT services such as virtualization (including server and storage hosting systems), migration to cloud services, thin client / desktop virtualization, and a host of other IT based services that result in

energy and operations and maintenance (O&M) savings. In addition, these programs can fund the direct physical consolidation of data centers / server rooms and associated advance metering and energy efficiency improvements. Information on FEMP sponsored alternative financing programs for Federal energy projects can be found at http://www1.eere.energy.gov/femp/pdfs/alternative_financing_fs.pdf.

For example, using an ESPC to fund a consolidation effort requires Energy Service Companies (ESCO) to conduct a Preliminary Assessment (PA) where Energy Conservation Measures (ECMs) are identified for an open scope of work (this work scope can be anything from server room / data center physical consolidation to transformational IT service consolidation or technologies). The ESCO (working with the agency) examines opportunities for ECM projects where there is sufficient savings in energy and/or O&M costs during the expected lifecycle of the new infrastructure / equipment. If it is likely there are sufficient savings projected for the projects then the ESCO conducts a more detailed audit. This Investment Grade Audit (IGA) will result in ECM funding model(s) that guarantees the Return on Investment (ROI) based on energy savings and/or reduced O&M costs. If the ECM's ROI is insufficient and the agency still wants to have the project implemented, the agency has to option to apply appropriated funding to cover any shortfalls.

Because DOE believes that the best opportunity to support Department-wide consolidation and associated transformational IT services is leveraging the use of alternative financing, DOE will need to work within the planning models for these programs. As such, there will be a need to rely on the assessments and identification of ECM projects and associated data center consolidation efforts by ESCOs to identify consolidation opportunities and cost metrics.

DOE will outline to the ESPC (and other alternative financing partners) its consolidation and IT service goals to provide a framework for their assessments. This will ensure that while DOE leverages energy and O&M savings, it will still meet the intent and objectives of the FDCCI effort.

In accordance with the OMB FDCCI implementation methodology and reporting requirements, DOE will focus on the Headquarters Program and Staff Office and Federal Site Office data centers for its Data Center Optimization Plan. The Management and Operating (M&O) contractor operated data centers will be reported in DOE Site Sustainability Plans, as required by the DOE SSPP. DOE will still meet previously stated goals for reducing the number of data centers by decommissioning at least 6 data centers by FY15. If during the execution of ESPC assessments, additional opportunities for optimization are discovered DOE will annotate the FDCCI Savings Plan to reflect these changes.

To ensure that data center inventories and energy metrics are being reported consistency and completely, As directed in the Department's SSPP, DOE is requiring that data centers be assigned a certified Data Center Energy Practitioner (DCEP). The DCEP program is part of the DOE "Save Energy Now" program sponsored by the DOE Energy Efficiency and Renewable Energy (EERE) Industrial Technologies Program (ITP) that trains and qualifies practitioners to evaluate the energy status and efficiency opportunities in data centers. The DCEP will conduct energy assessments of their assigned data centers and assist the facilities and IT staff in the identification of energy efficiency improvement opportunities, implementation of infrastructure and operations (I/O) best management practices and the measurement of the Power Utilization Effectiveness (PUE) for assigned data centers.

Using a dedicated version of the DOE Data Center Energy Profiler Software Tool Suite (DC-Pro), called the IT Sustainability and Data Center dashboard, the DCEP will conduct annual energy assessments and IT inventories of assigned data centers. The tool suite, developed by DOE EERE ITP, is comprised of a web-based energy efficiency profiling tool and a set of system assessment worksheets that provide diagnostics on specific areas within a data center. DC Pro generates data center energy profiles that provide a general idea of where energy is being used, as well as detailed energy assessments on critical data center systems such as cooling and electrical use. By using DC-Pro, the DCEP can determine how energy is being used in a data center, identify energy-savings opportunities and calculate potential energy savings (and associated environmental emissions reductions) with proposed data center I/O best practices and projects. By requiring the use of DCEPs and the DC Pro toolset, DOE will improve the quality and completeness of data center inventories and the IT systems they contain.

2. Agency Goals for Data Center Optimization

The goals defined in this Plan are focused on reducing the number of data centers in the DOE inventory, improving the power/cooling infrastructure in remaining data centers, improving the efficiency of the IT systems in these data centers, and implementing IT technologies and architectures that support mobile computing, cloud services, and other innovative and transformational services that meet user requirements while reducing energy and O&M costs.

For example, qualitative goals include:

- Optimize the infrastructure needed to power and cool DOE data centers and server rooms.
- Reduce the total cost for IT system hardware, software by acquiring the most efficient, environmentally preferable IT and data center equipment capable of supporting DOE missions.
- Reduce the total cost of IT and data center operations by implementing "transformational" technologies, service automation, and best-practice based standards and policies.
- Use alternative financing (ESPC / UESC) services to leverage energy and O&M savings to implement technologies and services that would not be possible with appropriated or incremental IT funding.

And associated quantitative goals will result in:

- Reduction in the number of DOE data centers and server rooms in accordance with our "Agency Wide Savings Plan".
- Reduction of physical numbers of DOE IT servers and supporting IT systems in accordance with our "Agency Wide Savings Plan".
- Increased energy efficiency of DOE data centers / server rooms and associated IT systems in operational data centers (an average target PUE of under 1.4 by FY15).
- Implementation of metering in 100% of operational data centers to manage, track and report energy consumption and efficiencies.

Specific performance goals and targets are documented in Appendix A "Agency Wide Savings Plan" of this Plan.

3. Implementing Shared Services/Multi-tenancy

The DOE approach leverages the use of ESPC financing to fund data center and IT infrastructure optimization. As such, ESPC assessments will examine opportunities for IT service optimization in the areas of:

- Email and Calendaring Services
- Enterprise Collaboration Tools
- Business Support Services (e.g., HR, Payroll, Acquisition, Budget)
- Office Services (Word processing, Spreadsheet, Presentation Software)
- Video Teleconferencing Services
- Mobile and Telework Services

By shared implementation of these common services there would be additional optimization benefits in areas such as:

- Reduction in the number of IT Help Desks
- Standardization of Desktop Equipment / Configuration
- Implementation of Self Service and other Automation Tools.

- Standardization of Cyber Policies and Systems
- Improved Network Infrastructures

DOE will specify to ESPC contractors to examine both internal shared services as well as external (i.e. cloud) services for opportunities to reduce overall costs for IT services.

4. Agency Approach, Rationale and Timeline

The use of ESPC (or other alternative sources) is a new contracting vehicle for IT infrastructure and service optimization. Traditionally these financing programs have been used for facility infrastructure projects. At DOE, the OCIO is taking the lead on the use of ESPCs for IT systems and data center optimization and is currently sponsoring an ESCP effort to be used for the optimization of DOE Headquarter data centers and server rooms as well as modernization and optimization of associated IT services and systems. Other DOE Management and Program Secretarial Offices (PSOs) are awaiting initial results of this effort to prepare their own ESPC or other alternative financing projects to support optimization efforts within their program areas.

Like the ESPC work scope identified in the current OCIO/HQ effort, PSOs will utilize ESPCs or other alternative financing contracts to:

- Identify data centers / server rooms for decommissioning
- Identify data center energy / space improvements to meet PUE goals
- Identify IT system consolidation / virtualization options and opportunities
- Identify IT services that might be migrated to enterprise or cloud services

ECMs will be developed to fund the execution of identified optimization or energy improvement efforts. These ECMs will be reviewed by the DOE Under Secretaries for prioritization, scheduling and supplemental funding consideration.

For DOE data centers not covered by this Plan, the SSPP requires that M&O DCEPs conduct DC Pro assessments, and in coordination with data center Facility Managers and IT Directors, define ECMs (including optimization projects) to be included in annual Site Sustainability Plans (SSPs). As these SSPs are documented, we will report relevant data center closures in our Savings Plans as well as closure schedules and status.

4.1. Approach Description:

Based on best practices and case histories with alternative financing contracts, DOE will leverage the use of ESPCs as a primary financing model for the FDCCI effort. If ESCP ECMs are deemed impracticable or do not meet program requirements, other alternate financing programs may be used or appropriated program funding may be applied to optimization projects.

PSOs will evaluate the scope of data center and/or IT service optimization work that applies to their organization keeping in mind the goals and objectives stated in the DOE FDCCI Plan. This scope definition will provide the initial or potential work scope to be provided to ESPC contractors (ESCOs) in the ESPC Notice of Opportunity (NOO).

ESPC ESCOs reply to the NOO with a Letter of Interest and Qualification Statement. These statements are reviewed by a PSO ESCO selection team and two or more ESCOs are selected for detailed interviews where project scope and the ESCO capabilities to perform the work scope are discussed. The PSO ESCO selection team identifies an ESCO to conduct a Preliminary Assessment (PA) in accordance with the defined work scope (the work scope for the PA can be defined as to let the ESCO introduce ECMs that were not initially defined in the NOO to maximize data center and IT service optimization opportunities).

The ESCO conducts a PA to identify data center / server room and IT service optimization (the PA can included other work scope as identified and directed by the PSO) ECMs. As part of the PA an initial baseline inventory is documented that included sufficient data to support potential ECM calculation of energy / O&M savings. Typically this baseline includes:

- Data center / server room inventory (as defined in scope by the PSO)
- Data center / server room metrics (space, power, cooling, PUE, etc)
- IT system inventory (for IT systems defined in scope by the PSO)
- IT system metrics (model, configuration, utilization, power, etc)
- IT application inventory (for systems defined in scope by the PSO)
- IT application metrics (system type, service type, middleware requirements, etc)
- Inventory and metrics on other data centers or IT systems as defined by the work scope for the ESCO.

This baseline is conducted by the ESCO at no charge to DOE. Information from this baseline will be used to update the FDCCI inventory data reported to OMB and used in the Savings Plan.

Based on the baseline data, the ESCO (working with the PSO facility and technical POCs) will identify potential ECM projects that should result in energy and O&M savings sufficient to cover the capitol or other costs for the project. PSO management representatives will select, annotate, or supplement the identified ECMs and if approved, direct the ESCO to conduct an Investment Grade Audit (IGA) for the ECMs.

The ESCO conducts the IGA where ECM projects are further baselined (if needed) and a business case is developed for each ECM. This business case defines the scope, technologies, life-cycles, Service Level Agreements (if needed), payback (ROI) model(s), risks, measurement and verification models, and payment guarantee expectations that ensure that DOE and the ESCO have agreement on the proposed ECM(s). The results of the ECM IGAs become the basis for project approval (by the DOE Under Secretaries) and task order execution to the ESCO.

If a PSO decides not to use an alternative financing solution for optimization efforts, traditional project management practices will apply. The PSO will be responsible for ensuring that a baseline of the data center is conducted that meets FDCCI, OMB and this Plan's requirements. Funding sources / amounts for optimization projects will be identified and schedules will be updated in the DOE Savings Plan.

4.2. Timeline:

For PSOs using ESPC or other alternative financing solutions, the schedule for ECM project identification is dependent on Contracting Officer requirements, results of the ESCO assessments and identified ECMs, and organizational goals supplemental to the goals specified in this Plan.

Based on previous data center closure plans, the following table reflects the current optimization schedule. As ESPC ECM projects are identified and approved, this table will be updated to reflect any changes and additions.

Data Centers Identified For Consolidation

No.	Agency Component	Data Center	Location	Action to be taken	Action Taken during Calendar Year
1	EE	Forrestal 1	Washington, DC	Consolidation	Q3 / 2012
2	EIA	Forrestal 2	Washington, DC	Consolidation	Q4 / 2013
3	IM	ESC-West	Albuquerque, NM	Consolidation	Q3 / 2012
4	LM	Mound Office	Miamisburg, OH	Consolidated	Q3 / 2011
5	OCRWM	Hillshire	Las Vegas, NV	Consolidated	Q3 / 2011
6	OCRWM	Sahara	Las Vegas, NV	Decommissioned	Q2 / 2010

5. Agency Governance Framework for Data Center Optimization

DOE is organized into three Under Secretary sub-organizations, the Under Secretary for Nuclear Security, the Under Secretary for Science, and the Under Secretary of Energy. Further aligned under these Under Secretaries are the PSOs. The National Nuclear Security Administration (NNSA) is aligned to the Under Secretary for Nuclear Security. The Office of Science is aligned to the Under Secretary for Science. All other major PSOs are aligned to the Under Secretary of Energy. The Management PSO (which is responsible for the Headquarters offices), works directly for the Office of the Secretary.

The Department has assigned the OCIO the lead role in implementing and coordinating all DOE FDCCI efforts including the FDDCI performance goals and reporting requirements. The OCIO has assigned a dedicated project manager to lead the IT sustainability and data center optimization initiatives.

The DOE Sustainability Program Office (SPO) is responsible for ensuring the integration and coordination of sustainability activities across the Department and represents DOE in interactions with other Federal agencies. The SPO will be DOE's primary source for information on DOE's sustainability efforts for external stakeholders, including the Office of Management and Budget (OMB) for FDCCI reporting.

In addition to the Under Secretaries, multiple Departmental Elements will serve as partners with the SPO on sustainability and data center optimization efforts. These Departmental Elements include the Office of Energy Efficiency and Renewable Energy, the Office of Management, the Chief Financial Officer, the Office of General Counsel, the Office of Health, Safety and Security, and the Chief Information Officer.

Each Under Secretary and Departmental Elements shall respond in a timely manner to FDCCI data calls and requests for information. It is essential that DOE meet all applicable deadlines for submissions required by the EO, OMB, and statute, or pursuant to the schedules in the FDCCI.

Under Secretaries, PSOs and partners have (or are in the process of) established internal organizations or teams to address sustainability planning, resourcing, implementation, and reporting. In the initial years of executing the FDCCI Plan, DOE will focus on further integrating sustainability into the program and budget development processes; address policy, procedural and operational challenges that limit our ability to reduce data center footprint; improve data center energy efficiency; and leverage technologies and best practices to emphasize sound environmental stewardship for the long term.

5.1. Cost-benefit Analysis

DOE will utilize cost/benefit analysis as an integral function in identifying candidate data centers and IT systems for optimization. For PSOs that are using ESPCs or other alternative financing programs to support optimization projects, the ESCO is responsible for defining ECM project business cases that specifically contain cost-benefit models to reflect projected cost savings (energy and O&M). These savings projections are used as a basis for up-front funding of ECM projects and the savings are guaranteed by the ESCO.

Since the ESCO is responsible for ensuring that the project savings meet or exceed actual savings after implementation, they are motivated to leverage all possible cost cutting measures. As such, they not only consider consolidation and optimization projects defined in an ESCO NOO, the will recommend other opportunities and options for viable, cost effective, and achievable projects. As such, their analysis will look at options such as:

- Optimization and/or elimination of data center facilities.
- Multiple agency tenancy at one or more data center facilities.
- Optimization, reduction, or elimination of wide area network circuits (voice, data, and video).
- Optimization, reduction, or elimination of local area network circuits (voice, data, and video).
- Implementation and/or expansion of green computing concepts to save energy and lower utility costs.
- Implementation and/or expansion of cloud computing services (Saas, PaaS, or IaaS) to lower delivery costs.

- Application virtualization and corresponding reductions in host servers.
- Consolidation of intra-campus cable plants for telephone and data.
- Reduction in Help Desk and IT Asset Management service costs through consolidation.

5.2. Risk Management and Mitigation

ESPC ECM project business cases developed by ESCOs are required to contain risk assessments and mitigation strategies. DOE will ensure that the ESCOs include risk evaluation criteria that include risk identification at the project, system, and data center level (as appropriate) for each ECM project.

DOE review of ECM projects will verify that risk assessments address:

- Project dependences and constraints that might impact schedule or costs
- New or untested technologies that might not meet project requirements
- Insufficient or inaccurate data or assumptions that might change expected outcomes
- Risks to SLA or customer expectations
- And other risks as identified

These and other identified risks will be reviewed and if feasible, mitigation strategies will be developed. Cost or schedule impacts due to the mitigation actions will be incorporated into the ECM data centers cost/benefit models for further consideration.

Projects under execution will have risks tracked and reported in accordance with normal project management processes.

5.3. Acquisition Management

The Under Secretaries will evaluate projects that require purchasing or leasing of IT systems to ensure that they are complaint with energy efficiency and sustainability requirements of the DOE and where possible, are incorporated into enterprise or other large scale purchasing programs. While PSOs may have specific requirements on hardware and software systems, where applicable, Department standards will be enforced.

ESCOs will be required to meet DOE acquisition requirements for sustainable IT and infrastructure system purchases. Where possible, they will be encouraged to leverage Department or Government wide purchasing agreements to reduce and manage costs.

Existing or planned support or major purchasing contacts will be evaluated to determine if scope or systems conflict with ESCO proposed ECMs. If there is an overlap or inconsistency with ECMs and these contracts, they will be evaluated to determine best value to the Department. Contract or ECM modifications may be necessary to meet the overall goals of the Departments optimization effort and will be reviewed as needed.

5.4. Communications Strategy

The FDCCI will be communicated to DOE personnel through a coordinated roll out. Activities will include:

- Memo from the SSO / OCIO to DOE personnel introducing the FDCCI
- Publication of the FDCCI Plan and support best practices on a DOE website
- A GHG summit of senior DOE leadership where FDCCI objectives and plans will be discussed.

In addition to the above activities, DOE will focus on integrating optimization and IT system best practices into the programming and budget development process; addressing policy, procedural, and operational barriers to reducing data center energy; and instilling a corporate culture that

emphasizes sound long-term environmental stewardship. DOE will also realign its policies and data tracking mechanisms with the FDCCI.

5.5. Best Practices

DOE's initial experience with the rollout of the FDCCI encountered difficulties in the following areas:

- OMB / FDCCI data calls could not be completed by data centers due to confusing or conflicting metrics specified/ provided in the templates.

- OMB / FDCCI data calls could not be completed due to lack of measurement systems/equipment and tools at the data centers.

- OMB / FDCCI data calls were not being directed to proper data center staff due to the dual nature of data centers (IT systems / Infrastructure systems). When data calls are requested, they typically go to the facility POCs and not directed to or supplemented by the IT POCs. This typically results in incomplete data call metrics.

- There is no or little funding available to invest in data center measurement systems, server utilizations assessments or optimization projects.

- There was no motivation to reduce IT system energy costs (invest funding) from the IT organizations as these organizations did not pay the power bills.

- There is a perceived need for each facility and/or DOE organization (each organization has individual IT funding budgets) to have "ownership" of their own data centers/ server rooms in order to support their business or mission needs.

- There was a perception that closing a data center would result in loss of jobs so sites passivity resisted completion of data calls and closure plans.

Based on our experience with these obstacles, DOE has introduced the following best practices and solutions:

- To ensure that DOE has a knowledgeable point of contact at each data center that is familiar with both the infrastructure (power/cooling) and the IT systems (bridging the gap between two organizations), DOE is requiring that each data center be assigned a certified Data Center Energy Practitioner (DCEP). The DCEP will be responsible for ensuring that data calls are responded to in a timely manner, that the information provided about the data center and IT systems within them is accurate, and to track and report optimization activities to appropriate PSO and OCIO staff as required.

- To address conflicting interpretation of data call criteria, DOE is establishing an IT Sustainability and Data Center dashboard system (based on the Data Center Profiling Toolset) that will allow PSO staff (and DCEPs) to report consistent metrics, project status and other data without maintaining multiple data sources, worksheets and history files. Data maintained in this system can be exported to meet OMB or other data call inquires as needed. This implementation methodology ensures that a complete business assessment is conducted for each data center and the consolidation and optimization activities are properly aligned and prioritized with other sustainability projects.

- To address the multiple needs of providing funding for data center and IT system assessments and to get an accurate inventory as possible, DOE is looking to using ESPCs and associated contractors to conduce baseline measurements and assessments. In addition to getting accurate and complete inventories, the independent nature of the assessments ensures that staff biases are mitigated.

- To address ownership and "not-my-bill" issues, DOE is again looking at the ESPC as a neutral process that can examine optimization work scope at the site, PSO and/or Under Secretary level and make project recommendations that cross data center or organizational boundaries. (For example, the HQ ESPC project currently underway involves all PSOs that have a presence in the DC Metro area.)

As DOE continues to document its progress with the HQ ESPC project, DOE will provide lessons learned and ESPC best practices to data center working groups and to OMB so that other Agencies may consider the use of ESPCs as a viable alternative to traditional project funding.

5.6. Real Property

A major driver in support of the Headquarters optimization effort has been DOE's Management and Administration (MA) requirement to reclaim data center space for office space. This requirement has expanded to actively examine other opportunities to convert server rooms and raised floor areas to office space and they are working with the OCIO and the ESPC effort to facilitate server room identification and consolidation.

The data centers scheduled to close (or closed to date) will have minor impact on Department's Real Property metrics. The closure of the Sahara data center has (or will be shortly) reported closed in DOE's Facility Information Management System (FIMS). This will reduce DOE's real property by about 16,000 SF. The data center located in the Mound Office, for two data centers located in our HQ Forestall facility and the OCIO data center located in Albuquerque are in a mixed use buildings. It is most likely that this space will be converted to office space resulting in no direct impact on the property inventory.

6. Progress

6.1. FDCCI Optimization Progress

Per the August 2010 schedule, DOE has closed the Sahara data center and has recently closed the Hillshire and Mound office data centers in CY11. One of the data centers in the Forrestal building is scheduled for consolidation in CY12 along with the Albuquerque data center. The remaining Forrestal data center is on schedule for consolidation in CY13.

The ESPC funding approach that is being used for the HQ Data Center Optimization effort has the opportunity to identify additional optimization projects as site assessments are conducted. While DOE has identified 6 data centers in the current savings plan, DOE will annotate and update this plan as additional optimization projects are identified as a result of the ESPC assessments.

Consolidation Progress (DOE)

	Target					
	4Q10	4Q11	4Q12	4Q13	4Q14	Total Closings Planned
Consolidation Targets – Facilities greater than 100 sq.ft.	1	2	2	1	0	6

The Consolidation Progress numbers are based on calculations and estimates from the OMB Total Cost of Ownership model - Beta 2.

6.2. Cost Savings

Per the August 30, 2010 schedule, DOE has decommissioned the RW/LM Sahara data center. There were minor consolidation costs associated with the Sahara data center as the supporting program "Yucca Mountain Project" was terminated. Sahara IT systems were consolidated to a temporary co-location site then were excised or transferred to other DOE programs.

As DOE continues using ESPC projects it is likely that additional or future costs savings associated with DOE data center optimization or decommissioning efforts will be identified. As these projects are identified, DOE will update our savings plans and associated inventories.